PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BCHydro

BRITISH
COLUMBIA

Cavity Nester Habitat Selection Project, Phase 1 Report: Snag Deterioration

L. J. Murray
July 1992

PWFWCP Report No. 13

105-01002/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

Citation: L. J. Murray. July 1992. Cavity Nester Habitat Selection Project, Phase 1 report: Snag deterioration. Peace/Williston Fish and Wildlife Compensation Program, Report No. 13. 11pp.

Author(s): Linda J. Murray[1]
Address(es): [1] P.O. Box 2078, Mackenzie, B.C. V0J 2C0

CAVITY NESTER HABITAT SELECTION PROJECT

PHASE 1 REPORT: SNAG DETERIORATION

Prepared by

Linda J. Murray

For the

Williston Wildlife Compensation Program

July, 1992

Between June 22 and July 2, 1992 the contractor, (Linda Murray) and Williston Wildlife Compensation Program (W.W.C.P.) personnel began Phase 1 of the Cavity Nester Habitat Selection Project. The attributes of 831 trees were sampled on C.P. 373, Block 5547. Five hundred and three of these were "short" (topped) snags created by the feller-buncher during logging operations. Another 257 trees were marked and sampled in 4 of the green tree retention islands. The remaining 71 trees, referred to as "residual trees" in this report, had naturally occurring broken tops, or were "normal" un-topped trees with a diameter at breast height (dbh) of at least 15 cm and were found among the "short" (topped) snags.

METHODS

"Short" (topped) snags were left in two treatment areas, the "Snags Only" treatment area and the "Snags and Islands" treatment area. All "short" (topped) snags and "residual trees" (dbh >= 15 cm) in both treatment areas were marked by nailing numbered aluminum tags to each tree. Trees closest to the mainline and closest to several of the spur roads (the accessible ones) also had yellow and black "Wildlife Tree" signs nailed to them. Some snags also had flagging tape tied to them. Flagging tape was used to help field personnel insure that no snags were overlooked. A map was developed showing the locations of tag numbers grouped between roads and treatment boundaries. This was done to help in future years when the same snags are re-sampled.

Attributes of each snag and "residual tree" were sampled according to the "Wildlife Tree Assessment Form" provided by Mari Wood of W.W.C.P. The Form was based on the "Wildlife/Danger Tree Assessor's Course Workbook" guidelines which were developed by MOF, BCE, and WCB. The Form was altered slightly in the field so that "DBH", "height" and "percent bark remaining" entries were recorded exactly and not grouped by class.

In four green tree retention islands all trees and snags with a diameter greater than 15 cm were marked by nailing numbered aluminum tags to each tree. Nails were left protruding to allow for tree growth. Two islands were randomly selected from the "Islands Only" treatment area and two were randomly

selected from the "Snags and Islands" treatment area. All attributes were sampled according to the "Wildlife Tree Assessment Form".

All use by wildlife of any of the sampled trees and snags was also recorded on the Forms. When a cavity was located, information was collected according the "Cavity Nester Working Plan" prepared by Rick Dawson and Linda Murray. A brief period was spent identifying birds in each of the sampled green tree retention islands. This effort was unlikely to locate all species in the islands because few birds were singing during mid-day when the island data was recorded. Any species noted in the logged areas were also recorded.

All data was entered into a computer using dBase. Table 1 lists the database file structure for the file containing the data records. For the sake of consistency, during data entry any tree in "decay class" "1" or "2" was considered "live" as described by the "Wildlife/Danger Tree Assessor's Workbook". As well, if "cause of death" was not due to "FB" (feller buncher) for any tree in "decay class" "1" or "2", its "cause of death" was considered "NA" (not applicable) since it was classified "live". Included in "cause of death" was the category "UN" (unknown) and included in "top condition" was the category "BR" (broken top).

Table 1: dBase structure for the file (CAVITY.DBF) containing the data records.

Field	Field Name	Type	Width	Dec	Description
1	BLOCK	Character	8		Cutting permit & block
2	TREATMENT	Character	17		Treatment unit
3	DATS	Date	3		Date
4	ASSESSORS	Character	5		Assessors
5	TREE_NO	Character	3		Wildlife tree ft
6	PERIMETER	Logical	1		Island feathering? (T/F)
7	ISLAND	Logical	1		Is tree in island? (T/F)
8	LIVE	Logical	1		Live? (T/F)
9	SPECIES	Character	20		Species
10	SITE_POS	Character	1		Site Position (A to G)
11	DBH	Numeric	4	1	DBH (cm)
12	HEIGHT	Numeric	4	1	Height (m)
13	DECAY	Numeric	1		Decay Stage (1 to 9)
14	DECAY_COM	Character	30		Decay Stage: comments
15	DEATH	Character	2		Cause of Death
16	DEATH_COM	Character	30		Cause of Death: comments
17	TOP	Character	12		Top Condition
18	TOP_COM	Character	30		Top Condition: comments
19	BARK	Numeric	3		Bark Remaining (%)
20	BARK_COM	Character	80		Brk Remaining: comments
21	FEEDING	Logical	1		Feeding signs? (T/F)
22	FEED_TYPE	Character	60		Type of feeding
23	PERCHING	Logical	1		Perching? (T/F)
24	PERCH_TYPE	Character	60		Species observ. perching
25	OTHERW	Logical	1		Other Wildl use? (T/F)
26	OTHER_WILD	Character	100		Other wildl use: comments
27	CAVITY	Logical	1		Cavity located? (T/F)
28	CAV_SIZE	Numeric	2		Cavity size (cm)
29	CAV_HEIGHT	Numeric	4	1	Cav. Ht. from ground
30	ACTIVE	Logical	1		Is cavity active? (T/P)
31	CV_SPECIES	Character	80		Excavator & comments
32	OTHER	Logical	1		Other observ.? (T/F)
33	OTHER_COM	Character	80		Other Observations

RESULTS

Snags:

Figure 1 shows the locations of tag numbers grouped between roads and treatment boundaries. As well, the map shows the tag numbers used in the four green tree retention islands, and the tag numbers of the "short" (topped) snags used as "feathering" around the islands.

A total of .227 "short" (topped) snags and residual trees were recorded in the "Snags Only" treatment area. Of these, 137 were "short" (topped) snags. Assuming the "Snags Only" treatment area is approximately 1/4 the block size, the feller buncher created an average of 6.7 snags per hectare. This is well within the criteria of 5 to 10 snags per hectare described in the original project design.

A total of 342 "short" (topped) snags and residual trees were recorded in the "Snags and Islands" treatment area. Of these, 159 comprised "feathering" around the edges of the green tree retention islands for safety and to try and minimize blowdown. Although these snags were numbered and sampled and will be used in the analysis of snag deterioration rate, they were not considered in the calculation of snags per hectare. One hundred and fifty seven "short" (topped) snags were recorded (excluding "feathering") in this treatment, leaving an average of 5.6 snags per hectare.

The recording of diameter at breast height (dbh) was missed for 4 snags. The tree numbers were 54 (spruce), 72 (pine), 121

FLETCHER CHALLENGE CANADA

FL. A15384

Total Area
Roads & Landings
~~NPG Buffer~~
Net Area

GPS Survey - 30 diffs
Date : November 28, 19
GPS Accuracies 20 m

Figure 1 Location of tag numbers

ark

10.000

TREATMENT

AREA _____ ha.

C.P. 373 BLK. 5547

DATE: JAN. 15, 1992

MAP REF

(fir) and 780 (fir).

Table 2 shows the number of snags by diameter class, decay class and species. The table includes "short" (topped) snags, "residual" trees, and "short" (topped) snags created for island "feathering" (in the "Snag and Island" treatment area).

Islands:

A total of 257 trees/snags were recorded in four green tree retention islands. Island #3 (Fig. 1) had 104 trees/snags; Island #4 had 78 trees/snags; Island #5 had 34 trees/snags; and Island #6 had 46 trees/snags. The lower numbers of trees/snags in Islands 5 and 6 were the result of blowdown.

Table 3 shows the number of snags by diameter class, decay class and species for the trees sampled in the green tree retention islands. This information includes all standing trees in these islands with a diameter greater than 15 cm.

Wildlife;

A total of 8 bird species were recorded on the block between June 22 and July 2. Table 4 lists the species, their location and status in the block.

A Swainson's thrush nest (not a cavity nester) was found in a 2.1 m tall Subalpine fir in Island 3. An active cavity nest belonging to a Black-backed woodpecker was found on the eastern edge of the block boundary in an Engelmann spruce of "decay class" "3". The spruce was 21.3 m high with a diameter at breast height (dbh) of 27.5 cm. The cavity entrance faced northeast, was

Table 2: Snag numbers by diameter class, decay class and species - 1992.

Diameter Class (cm)	Decay Class	Number of Snags			
		Engelmann Spruce	Subalpine Fir	Lodgepole Pine	Black Cottonwood
15.0 - 24.9	1	11	53	2	0
	2	3	13	1	0
	3	1	0	1	0
	4	1	1	3	0
	5	0	3	1	0
25.0 - 34.9	1	38	48	25	1
	2	3	0	1	0
	3	2	1	2	0
	4	5	7	2	0
	5	2	9	3	0
35.0 - 44.9	1	77	33	28	2
	2	10	4	5	0
	3	3	3	0	0
	4	2	9	3	0
	5	2	6	0	0
45.0 - 54.9	1	33	14	6	5
	2	13	1	1	0
	3	3	3	2	0
	4	5	7	0	0
	5	0	5	1	0
55+	1	17	6	0	5
	2	4	0	0	0
	3	2	0	0	0
	4	4	0	0	0
	5	0	0	0	0
Totals		241	229	87	13

Table 3: Tree numbers by diameter class, decay class and species for the green tree retention islands - 1992.

Diameter Class (cm)	Decay Class	Number of Snags			
		Engelmann Spruce	Subalpine Fir	Lodgepole Pine	Black Cottonwood
15.0 - 24.9	1	14	75	3	0
	2	4	0	0	0
	3	1	1	1	0
	4	0	1	1	0
	5	0	1	0	0
25.0 - 34.9	1	11	26	9	0
	2	2	0	0	0
	3	0	2	1	0
	4	4	6	1	0
	5	1	4	0	0
35.0 - 44.9	1	14	14	4	0
	2	0	3	0	0
	3	2	1	0	0
	4	0	1	0	0
	5	0	1	0	0
45.0 - 54.9	1	16	5	0	0
	2	1	0	0	0
	3	0	1	0	0
	4	0	4	0	0
	5	0	2	0	0
55+	1	15	2	0	0
	2	1	0	0	0
	3	0	0	0	0
	4	0	1	0	0
	5	0	0	0	0
Totals		86	151	20	0

Table 4: Bird species recorded in sample block during Phase 1 of the Cavity Nester Habitat Selection Project.

Species	Location	Activity/Status
Black-backed woodpecker	In block and in Island #4	Breeding
Swainson's thrush	Island #3	Breeding
American Robin	Islands	Singing (breeding?)
Yellow-rumped warbler	Islands	Breeding
Wilson's Warbler	Islands	Breeding
Chipping Sparrow	Islands and nearby area	Breeding?
Dark-eyed junco	Throughout block	Breeding
Lincoln's sparrow	Wetter areas of block	Breeding
Pine siskin	Throughout block	Wandering: not sure if breeding

approximately 5 cm in diameter and was situated 7.3 m above the ground. Based on the commotion when adults arrived at the cavity, the young had hatched but had not yet fledged. Nesting record information for both these birds will be forwarded to the B. C. Museum for their records.

Four other cavities or cavity starts were located in the islands. None of them were active.

A total of 99 trees had feeding signs. Fifty three trees were used by Black-backed woodpecker. The Black-backed woodpecker has a habit of flaking off the outer scales of a tree while searching for insects making it easy to identify a spruce or pine fed on by this species. Fifty one of the trees considered used by the Black-backed woodpecker were Engelmann spruce. Another 39 trees were used by a woodpecker, although the species could not be determined. Seven trees (5 lodgepole pine, and 2 Engelmann spruce) had unusual patches of missing bark heavily coated with resin which were possibly knawed off by porcupines.

Thirteen holes, possibly squirrel holes were found at the base of trees. Marten scat was found on a log next to a tree in Island 5.

Five numbered trees (not including islands) were used for perching. Two were "short" (topped) snags and 3 were in residual trees (one with a broken top). The species seen perching were Pine siskin, Dark-eyed junco, Chipping sparrow and Black-backed woodpecker.